15¢

SCIENCE NEWS LETTER

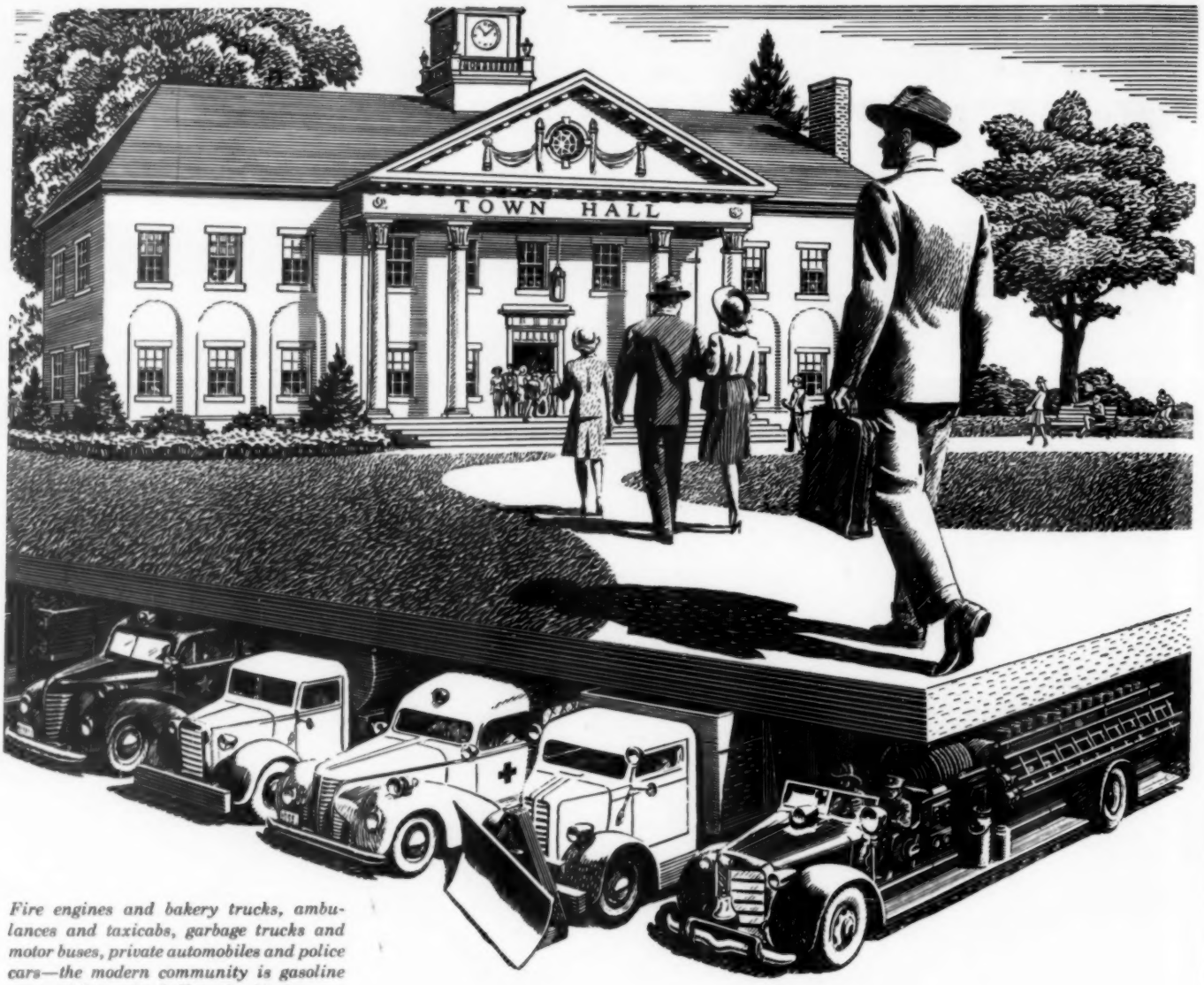
THE WEEKLY SUMMARY OF CURRENT SCIENCE

Only Beautifies!

See Page 360

A SCIENCE SERVICE PUBLICATION

TWENTY-FIFTH ANNIVERSARY



Fire engines and bakery trucks, ambulances and taxicabs, garbage trucks and motor buses, private automobiles and police cars—the modern community is gasoline powered from city hall to city limits.

Your community runs on gasoline

ON YOUR WAY to lunch some busy noontime count the many different types of motor vehicles it takes to keep your community rolling. It will help you understand why the improvement of gasoline transportation —why every increase in the power and economy of gasoline engines — benefits *everyone* in town.

For many years, Ethyl antiknock fluid, used by refiners to improve gasoline, has been of considerable help in the big, overall job of providing the nation with more economical transportation. That is because so many improvements in engines have depended to a large extent upon the availability of higher antiknock gasoline.

During the war, when the bulk of the antiknock fluid manufactured was needed for aviation and military gasoline, civilian vehicles were forced to operate on fuels of lower antiknock quality. This resulted in loss of power, performance and economy which could not be avoided under wartime conditions.

For it is true that anything which prevents the development and use of higher antiknock motor fuels can not help but impede progress in automotive transportation. On the other hand, each improvement in the quality of gasoline by petroleum refiners is a definite step toward better and more economical transportation for your community. Ethyl Corporation, Chrysler Building, New York 17, N. Y.

More power from every gallon of gasoline through

ETHYL

Research · Service · Products

PSYCHIATRY

Drugs for Mental Diseases

New remedies are reported for treatment of various mental disorders, and one to improve behavior of problem children. Hope for alcoholics suggested.

➤ LACTIC ACID, known to the layman in buttermilk and sauerkraut juice, adrenalin and medically induced delirium are new treatments for mental disease reported at the meeting of the American Psychiatric Association in Chicago.

Doses of lactic acid and sodium lactate given in milk helped seven severely depressed patients recover, brought marked improvement to five more and some improvement to another 14, Drs. Hans Lowenbach and Maurice H. Greenhill, of Duke University School of Medicine, reported.

The other 19 of the 45 patients treated were not helped.

The reason for giving the lactic acid was that this chemical is produced in the body in the violent muscular activity that occurs during shock treatment. The Duke psychiatrists thought that this might be the factor responsible for recovery of some patients following shock treatment.

Most of the patients and medical students on whom the treatment was first tried had a short period of stomach distress following the dose of lactic acid. This soon subsided and was followed by drowsiness and relaxation. Patients were able to sleep who previously had required sleeping medicine.

Adrenalin, one of the hormones produced by the adrenal glands, offers a definite prospect of aid to patients with persistent anxiety states, Dr. D. Ewen Cameron of McGill University believes from his experience with this treatment.

The chemical is given by injection into the muscles or veins. The treatment is time-consuming and tedious and should not be undertaken unless both patient and physician are convinced nothing else will help, Dr. Cameron warned.

Patients get some relaxation and symptoms disappear temporarily at the end of a day's treatment. In the course of many months, the symptoms gradually disappear altogether. Dr. Cameron believes the results so far warrant attempts to find better methods of using the treatment so that it can become practical.

The good results with artificial delirium were reported by Dr. Thomas J. Heldt of the Henry Ford Hospital, Detroit. He finds it universally beneficial for patients with borderline psychiatric disorders.

The delirium is induced by sodium amytal given in large enough doses to keep the patients asleep from 12 to 20 hours every day for from five to 12 days. No solid food but plenty of liquid nourishment is given during this period. When signs of a toxic condition begin to develop, the drug is stopped, fluids reduced and delirium produced. The delirium usually lasts three to six days. During this time the patient's inhibitions are released and he can more readily answer the psychoanalyst's questions. Through this, he gains understanding of himself and can adjust better to life.

Problem Children

➤ A DRUG THAT makes problem children behave better has been discovered by Dr. Charlotte F. Walker and Miss Barbara B. Kirkpatrick of Duke University School of Medicine.

The drug is diphenylhydantoin sodium and goes under the trade name of dilantin.

Before parents of unruly children start a run on the neighborhood drug store, they should consult their physician. The drug is sold only on a doctor's prescription.

It was developed about 10 years ago for treatment of epilepsy and has greatly aided some patients with that disease. Its new use for problem children was announced by the Duke researchers at the meeting.

Important advantage of the drug treatment is that the children do not have to be sent to an institution but can remain at home. Even without their being moved from a bad environmental or psychological situation, their bad behavior was controlled or improved by the drug.

The children studied by the Duke researchers did not have epilepsy nor was there any history of epilepsy in their families. The children did, however, have abnormal brain waves. The scientists believe that their discovery of the abnormal brain waves and good response to dilantin in these problem children should have further study because of the possibility of preventing the problem behavior becoming something more serious.

Hope for "Lost Weekenders"

➤ SOME DAY alcoholics may be able to use a treatment, somewhat like insulin for diabetics, that will keep them from having "lost weekends." This is a possibility that may result from research suggested by Dr. J. D. Reichard, medical director of the U. S. Public Health Service at Lexington, Ky.

The action of amphetamine, or benzedrine, known to the layman as "pep pills" which students took to keep awake while cramming for examinations, was specifically cited by Dr. Reichard.

This drug is familiar to psychiatrists for the sometimes successful and spectacular improvement of the mood of mental patients. Dr. Reichard did not suggest the use of amphetamine for alcoholics. His idea, however, is that if a chemical can induce a change in mood and behavior of one type of mental patient, some other chemical might be found to change the mood and behavior of the alcholic.

Search for this chemical to control alcoholism and other types of drug addiction as insulin controls diabetes must be based, he said, on a better understanding of normal anatomy, chemistry, physics and physiology as they are related to human feelings and behavior.

"Cures" of alcoholism are not cures in the sense of the word applied to other diseases, he pointed out. Cure of a disease ordinarily means that the ill person has recovered so completely he can resume his usual activities.

"If," he said, "we actually could 'cure' a person addicted to alcohol who for years prior to addiction had been able to drink in moderation, we should expect him then to be able again to return to moderate drinking. Such results of treatment are so uncommon as to be almost non-existent."

Remove Frustration

➤ A VERY serious chronic mental disease, schizophrenia, may be prevented in some cases by removing the frustration which threatens to unbalance the patient's mind.

Case histories showing how this could be accomplished were presented at the meeting by Dr. J. M. Nielson and Dr. George N. Thompson of Los Angeles County General Hospital.

Immediate recovery followed removal of the frustration in some cases. In one instance, the illness could be brought on again by simply reintroducing the frustrating situation.

Frustration does not always lead to schizophrenia, nor is the illness always caused by frustration, the Los Angeles physicians pointed out. They explained how frustration may lead to schizophrenia somewhat as follows:

A state of anxiety results when a person, once frustrated, cannot accept defeat but continues to strive for the unattainable goal. Emotional depression, on the other hand, results when frustration is accepted as final, yet the desire for the unattainable goal continues without active pursuit of it. When the depression comes to an end, they said, various forms of reaction may appear, depending on the make-up of the individual.

These reactions include an attack, either verbal or physical, on the object or situation causing the frustration; sublimation of one's ambitions; or a psychotic response, that is, outright mental sickness. Only a relatively small number, the doctors said, will develop a psychotic reaction, resembling schizophrenia. If the frustration is then overcome by direct assault or by sublimation before it becomes thoroughly established, complete recovery can be achieved. If success is impossible a genuine schizophrenia may develop.

Children suffering from the very severe mental sickness called schizophrenia actually have a better chance of getting well when treated at the doctor's office than when sent to a mental hospital, Dr. J. Louise Despert of New York Hospital finds.

Although the prospect of complete recovery remains doubtful, results of this treatment which allows the child to live at home with his family have been encouraging.

Dr. Despert has tried the treatment on seven children ranging in age from three to seven years.

Science News Letter, June 8, 1946

SOCIOLOGY

Culture Theory Proposed

➤ A MODERNIZED theory of culture which embraces nearly all known civilization since the beginning of recorded time, excepting the Americas before Columbus, has been postulated by Prof. A. L. Kroeber, anthropologist of the University of California.

Prof. Kroeber models his concept after the Greek theory of culture, called Oikoumene, meaning "the inhabited," which was actually the Mediterranean basin. This was all the inhabited world known to the Greeks.

The concept proposed by Prof. Kroeber holds that the known cultures of Europe and Asia form the parts of a whole pattern. These cultures have all drawn upon what Prof. Kroeber calls the root-stock of all higher civilizations.

Thus, for example, sculpture is a cultural expression of a wide range of higher civilizations, in different periods of time in widely separated geographical areas. While this art was developed in different forms and to different degrees of perfection, sculpture is a part of the root-stock of higher civilizations, and is unlimited by time or geographical considerations. It was borrowed by the exchange of ideas for differential development.

Prof. Kroeber pointed out that the interrelations of the different known cultures are such that it is extremely difficult and in many cases impossible to determine when or where a cultural expression such as the domestication of animals and plants or the development of games of mental skill took place.

The anthropologist said that his concept would involve a shifting of the Greek "Oikoumene," meaning from "range of mankind" to "range of man's most developed cultures," thus giving a significant designation to an interwoven set of happenings.

Prof. Kroeber, speaking recently as Huxley Medalist before the Royal Anthropological Institute of Great Britain and Ireland, meeting in London, England, excluded the pre-Columbian Americas from his "Oikoumene" because there is no definite interrelationship between the cultures of the Americas and Eurasia during this time.

Prof. Kroeber's Oikoumene encompasses not the totality of the culture of all humanity at all periods and all places, but "as large a sector of it as the millennially interrelated higher civilizations in the connected mainland masses of the eastern hemisphere."

"The speed of diffusibility of culture content is so great under optimum conditions," Prof. Kroeber said, "that the period of half-a-dozen millenia which we have been considering would have sufficed for particular items—say something like smoking, or coffee—to have spread around the planet again and again and again.

"What counts for total comprehension of the story of man's doings, however, is not these flashing meteoric bits, but the concatenated masses of culture and the interrelations of these. . . . .

SCIENCE NEWS LETTER
Vol. 49 June 8, 1946 No. 23

The weekly summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C. NOrth 2255. Edited by WATSON DAVIS.

Subscriptions—$5.00 a year; two years, $8.00; 15 cents a copy. Back numbers more than six months old, if still available, 25 cents.

Copyright, 1946, by Science Service, Inc. Republication of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service.

Entered as second class matter at the post office at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., PEnnsylvania 6-5566 and 360 N. Michigan Ave., Chicago, STAte 4439.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: Edwin G. Conklin, American Philosophical Society; Otis W. Caldwell, Boyce Thompson Institute for Plant Research; Willard L. Valentine, Editor of Science; ***Nominated by the National Academy of Sciences:*** Harlow Shapley, Harvard College Observatory; Warren H. Lewis, Wistar Institute; R. A. Millikan, California Institute of Technology. ***Nominated by the National Research Council:*** Hugh S. Taylor, Princeton University; Ross G. Harrison, Yale University; Alexander Wetmore, Secretary, Smithsonian Institution. ***Nominated by the Journalistic Profession:*** A. H. Kirchhofer, Buffalo Evening News; Neil H. Swanson, Executive Editor, Sun Papers; O. W. Riegel, Washington and Lee School of Journalism. ***Nominated by the E. W. Scripps Estate:*** Max B. Cook, Scripps Howard Newspapers; H. L. Smithton, Executive Agent of E. W. Scripps Trust; Frank R. Ford, Evansville Press.

Officers—President: Harlow Shapley. ***Vice President and Chairman of Executive Committee:*** Alexander Wetmore. ***Treasurer:*** Frank R. Ford. ***Secretary:*** Watson Davis.

Staff—Director: Watson Davis. ***Writers:*** Frank Thone, Jane Stafford, Marjorie Van de Water, A. C. Monahan, Martha G. Morrow, Ronald Ross. ***Science Clubs of America:*** Joseph H. Kraus, Margaret E. Patterson. ***Photography:*** Fremont Davis. ***Sales and Advertising:*** Hallie Jenkins. ***Production:*** Dorothy Reynolds.

"It is in connection with the understanding of major drifts such as these that the concept is here submitted of an Oikoumene consisting of a specific, preponderant, interwoven, definable mass of culture charged with a modern significance additional to the original sociogeographical designation in which culture reference was at best only implicit."

Of his reasons for excluding the Americas from his "Oikoumene," Prof. Kroeber said: "I would not deny that first and last a great many seeds of culture passed, by land or by sea, from Asia to this or that part of the Americas, and that some proportion of them germinated, or a least stimulated new growths on the soil. Yet the story of major civilizational growth in America . . . gives no indication of integrating with the corresponding story in Eurasia. The two are not, so far as we can yet see, parts of a single plot."

Science News Letter, June 8, 1946

RADIO

Loran Guides Bombs

Radio navigation system can be used in the next war to guide bomb-carrying pilotless aircraft to the target thousands of miles away.

➤ THOUSANDS of bomb-carrying pilotless aircraft in the next war could be rained upon an enemy nation thousands of miles away through use of the radio navigation system called loran that was developed and used during the war.

Dr. J. A. Pierce, now at Harvard, who participated in the loran development at the MIT radiation laboratory, describes in a communication to the Institute of Radio Engineers a method that would allow all-weather flying bombs to be launched from hundreds of points and guided to their targets by an invisible net of precisely timed signals spread over the area attacked (*See* SNL, Feb. 9, 1946).

"Since hyperbolic navigation does not call for the transmission of any information from the vehicle under control, it is a mechanism with vast potentialities for the two-dimensional guidance of automatic projectiles," Dr. Pierce states.

"If flying bombs are to become the all weather airforces, no other system offers such immediate possibilities for the mass control of very large numbers of projectiles. Systems which require some contact between a projectile and a ground operator other than the launching crew, may well have many tactical uses in close support operation, but the possibility of maintaining the strategic bombardment by such method is remote.

"A hyperbolically (or loran) controlled flight of pilotless aircraft, on the other hand, could be operated without any close cooperation between launching crews and the controlling group, and without saturation of the guiding facilities. The receivers for hyperbolic operation of this sort would differ greatly from the present loran receivers. The equipment for pilotless aircraft should be reduced to the stage where they know only a single time difference but know it well. A pair of ground stations would establish a line of position extending from the launching area to the target, while a second pair would define the intersecting line at which the projectiles would descend. Under gyroscopic control the projectiles could be launched at any time and in any number, and the accuracy of their initial courses would need only to insure an intersection with the first hyperbolic line before passing the target."

Aircraft could be launched from many points in a large area. Dozens or hundreds of launching sites would independently send off aircraft sensitive to a single line of position. It would only be necessary to have the control system in operation. These aircraft would follow their independent courses, perhaps for half the distance to the target, until they came within the zone of influence of the loran or hyperbolic lines. Each would then change its course and come about to ride the line. The effect would be that of raindrops falling into a gigantic funnel and being concentrated into a steady stream playing the target.

"Such a stream of bombs would, of course, rapidly obliterate any objective," Dr. Pierce explains. "In practice, therefore, the ground station operators would steadily alter their timing constants so that the line followed by the projectiles would be caused to sweep back and forth over the target area, while the constants of the release line would be altered, perhaps in steps, to provide the requisite variations in range.

"The stream could be played back and forth across the target area like the stream of a fire hose, or more exactly, like the stream of electrons scanning a television screen. All this control could be exercised without any cooperation from the launching crews. Like the loaders on a battleship, they would simply maintain the flow of projectiles without giving thought to their destination."

Science News Letter, June 8, 1946

MEDICINE

Baby's Life Saved by Removing 75% of Blood

➤ A BABY doomed to almost certain death at its birth less than a year ago is now alive and well because physicians dared to remove 75% of the blood in the tiny infant's body. The story of this dramatic procedure which has now been carried out successfully on three desperately sick babies is told by Dr. Harry Wallerstein of New York in a terse report to fellow scientists in their journal, *Science*, (May 10).

Each baby lived because during the same hour that 75% of its blood was being drawn from one vein, a somewhat greater amount of fresh blood was flowing into another vein.

The reason for the procedure was that the baby in each case had inherited from its father the Rh positive blood factor while its mother had blood with the Rh negative factor. When this happens the slight mixing of baby's and mother's blood before birth may bring into the unborn baby's veins a substance that destroys its blood cells. Sometimes this destruction is so great the baby dies at or before birth. In other cases the baby may be born alive but jaundiced and sickly.

Transfusions of Rh negative blood sometimes tide the baby over until the blood-cell-destroying substances are got rid of. Because these transfusions do not always save the baby, Dr. Wallerstein had the idea of getting rid of the harmful blood rapidly and of making it safe to do so by simultaneous transfusion of new blood.

A more widespread use of this method for saving babies born with the condition, called erythroblastosis fetalis, is justified, Dr. Wallerstein states, by his results.

Science News Letter, June 8, 1946

GEOPHYSICS

Drowned Archipelago

Numerous submerged flat-topped mountains have been located in the Pacific between Hawaii and the Marianas by means of echo-sounding apparatus.

➤ AMERICAN WARSHIPS, steaming westward from Honolulu to liberate the Philippines, passed right over a great drowned archipelago, existence of which had never before been suspected. At the American Geophysical Union, in Washington, Prof. H. H. Hess of Princeton University told how 160 submerged flat-topped peaks, rising from the ocean floor between Hawaii and the Marianas, had been discovered by means of echo-sounding apparatus carried by ships.

The drowned mountains may have been a cluster of atolls, like the Marshalls, site of this summer's atom-bomb tests. This is suggested by the flatness of their tops. If the water were drained away from Bikini or one of its sister atolls, it would appear as a steep-sided mountain with a slightly raised rim around its flat top. This rim is all that now appears above the water, as the islands and reefs of the atoll.

There is just one thing wrong with that theory, Prof. Hess stated: these drowned mountains don't have any raised rims. On the contrary, there is a gently sloping shelf, like a beach, around most of them. He advanced the tentative hypothesis that they are volcanoes that emerged from a very ancient sea, were planed off by wave action and subsequently immersed by the simultaneous sinking of the ocean floor and rising of the sea level. He thinks that this may have occurred as far back as pre-Cambrian time—something more than half a billion years ago.

Without question, this lost island empire will be made the locale of Atlantean romances as soon as fiction-writers hear about it. Prof. Hess, more practical-minded, merely suggested more thorough sounding and more complete charting of the area.

Speaking for a committee on the study of ocean basins, of which he is chairman, Prof. Hess strongly urged a program of deep drilling on Pacific atolls. How these curious ring-shaped islands came into being has been the subject of speculation and discussion ever since Charles Darwin proposed the first scientific theory, more than a hundred years ago. But so far no one has undertaken to find out actual facts by boring a few deep holes.

Prof. Hess also announced the forthcoming publication by the Hydrographic Office, U. S. Navy, of a detailed chart of the ocean bottom in the western Pacific area, covering the area from Japan to northern New Guinea and including the Marianas, the Western Carolines and the Philippines. This has been made possible by the tens of thousands of echo-soundings recorded by cruising Navy vessels during the war. Similar bathymetric charts for the areas from New Guinea to New Zealand and from Hawaii to the Marianas are also in prospect.

It's Been Getting Warmer

➤ WHEN THE present generation of youngsters get to be oldsters they may be able to tell their grandchildren that "summers were lots hotter when Grandpa was a boy." Since the 1870's, winters have been growing milder and summers hotter, J. B. Kincer, veteran of many years' service with the U. S. Weather Bureau, reported to the meeting. However, he added, there are indications that a reversal of the trend is about to take place.

Mr. Kincer's exhaustive statistical analyses of weather records from all over the country show this to be true not only of average temperatures but also of extremes. For example, days with temperatures of 90 degrees Fahrenheit or higher in Washington's notoriously uncomfortable summers averaged 34 per year for the 20 years ending 1945, whereas for a 20-year period ending 1907 there were on the average only 19 days per year. On the other hand, days when the thermometer failed to rise above freezing point (which is really cold weather for Washington) were less numerous in the recent period than in the earlier one: an average of 11 as against 17.

Mr. Kincer believes that studies of this kind may have some value in efforts towards long-range weather forecasting, provided too great demands are not made of them. They are valuable, he said, "in affording an indication of expectancies or probabilities of future weather beyond the range of standard synoptic forecasting."

Waves Can Outrun Wind

➤ "SWIFTER than the wind" is literally true of some ocean waves, reported Dr. H. U. Sverdrup, director of the Scripps Institution of Oceanography. With W. H. Munk, he has been making a study of wave behavior with relation to the wind; some of their results were of great value in naval operations and beach-head seizures during the war.

Wind can start and speed up waves in two ways, Dr. Sverdrup stated. One way is by direct push at the water surface. This in itself would never generate waves able to outrun the wind that raised them. However, there is a second effect of the wind "brushing over" the surface of the water and creating drag, or skin friction. With this added impetus, waves take on additional speed and sometimes literally run away from the wind.

How earthquake-recording instruments can be used in locating and forecasting the movements of storms at sea was told by Marion H. Gilmore, director of hurricane microseismic research for the Navy.

Instruments Place Storms

➤ IT HAS been amply demonstrated that slight tremors in the earth's crust—mere ripples as compared to earthquake waves—are set in motion by storms, especially by violent storms of the hurricane type. By close study of the shapes of the "squiggles" that appear on the seismograph record, it is possible to tell how far off the storm is, and by coordinating the data of two or more stations it is possible to tell exactly where it is; and how fast and in what direction it is moving.

It used to be conjectured that "microseisms" were caused by the battering of huge waves on the shore. However, the studies demonstrated that the tremblings are started on the ocean bottom, right under the storm center itself. How the energy of the wind is transmitted through the water and into the rocky crust underlying the ocean has not yet been determined.

PSYCHOLOGY

Atom Control Psychology

Five-point program presented to atomic scientists by psychologists urges the nation to combat fear of atomic energy by stopping atom bomb manufacture.

➤ PSYCHOLOGISTS have presented the atomic scientists and the nation with a five-point program for the psychological control of the atomic energy problem:

1. The atomic bomb danger must be understood by everybody.
2. The promise of peaceful use of atomic energy must be emphasized.
3. An effective civilian control of atomic energy must be instituted in our country.
4. International control must be an immediate next step.
5. We must stop making atomic bombs immediately.

"No atomic bomb can declare war," the statement issued adds, "only man can do that."

"The fear that the atomic bomb has created can and must be dispelled by cooperative social endeavor," it is further stated in the pronouncement prepared for the Association of Atomic Scientists by the Society for the Psychological Study of Social Issues, a division of the American Psychological Association.

Its committee on international peace, of which Dr. David Krech of Swarthmore College is chairman, suggests that everyone should be made aware that there is no military defense against the horrors of the atomic bomb. The real danger is the possibility of another war. The atmosphere of demoralizing fear of atomic energy can be reduced by presenting atomic energy facts in honest, unexaggerated peacetime terms.

Suspicion of military use of atomic energy, the statement says, can be laid to rest by a program of civilian control with public proceedings of the civilian commission. Positive assurance should be given now, it is urged, that we will cooperate in international control when it is set up along lines of the recent State Department report.

The manufacture of atomic armaments should be discontinued immediately, it is recommended, and this should be announced in unequivocal words to our citizens and the world.

"Psychologists know that a vague fear in an individual soon leads to a sick individual," the statement says. "This vague fear spreads and influences all his thinking. If we become victims of such a fear we will soon begin to suspect and distrust every other country, every international proposal, every move. We will frantically take every imaginable precaution against this unknown danger.

"We will accept the suppression of freedom of speech, of freedom of research, of freedom of criticism in our country, because in our panic we will not know whom to trust nor whom to believe. And like the sick patient ridden by an ill-understood fear, we will see threats to our safety everywhere. We will therefore support a national policy of universal conscription, militarism, and political isolation. This sick and distorted thinking is just the mental preparation which sets the stage for international conflict and violence."

Science News Letter, June 8, 1946

MEDICINE

Diabetics May Be Told To Stop Smoking

➤ DOCTORS WILL soon be telling their diabetic patients not to smoke, if they follow the warning that appears, without being stated, in a report by Dr. Leonard A. Weinroth and Dr. Joseph Herzstein of Mount Sinai Hospital, New York City (*Journal, American Medical Association,* May 18).

Blood-vessel disease of a kind that incapacitates the patient with pain and weakness in his feet and legs so that he cannot walk or that leads to ulcers and gangrene afflicted significantly more smokers than nonsmokers in a group of 301 diabetic men, these doctors found.

The conditions were present in 126 of the 218 smokers but in only 31 of the 83 nonsmokers. This "penalty" was paid by smokers regardless of how long they had diabetes, how severe the diabetes was, how well it was controlled by diet and insulin and whether they were overweight or had high blood pressure.

The way in which smoking might cause the blood vessel disease in diabetics is not clear, the doctors state. They suggest that a patient whose blood vessels are already constricted and hardened may have them further constricted by tobacco smoking, which is known to have this effect. This would favor formation of blood clots which would stop blood circulation to the feet and legs and lead to the pain, ulcers and gangrene.

Science News Letter, June 8, 1946

ELECTRONICS

Mariner's Pathfinder Is Simplified Radar

➤ A MARINER'S pathfinder is among the new interesting instruments recently shown at the National Marine Exposition in New York.

It is a dependable and rugged commercial radar equipment developed for the merchant marine, the principal feature of which is, perhaps, its simplicity.

The new surface search radar equipment is based upon experience in wartime designs and production, but is unusually flexible in installation and gives maximum performance, the makers claim. It was designed and constructed by the Raytheon Manufacturing Company of Waltham, Mass. It operates within the band of frequencies allocated by the Federal Communications Commission for commercial radar, and provides reliable and early warning of dangers ahead.

The pathfinder is divided into three major components: indicator, transmitter-receiver, and antenna. The indicator is box-shaped and less than 15 inches square, and two feet deep. It is mounted on a pedestal, or bracketed from the bulkhead or the overhead. On its face is a seven-inch plan position indicator or polar chart, which is normally oriented with respect to the ship's bow. Only seven controls are required on the indicator panel.

The antenna is a seven-foot parabolic reflector of slatted construction to minimize wind resistance. It weighs less than 150 pounds and may be mounted on top of the mast to provide maximum view. The transmitter-receiver houses all necessary system units and provides for accessory mounting when required. Power transmission to the antenna is by means of low-loss coaxial cable when desired.

Science News Letter, June 8, 1946

House *centipedes* are beneficial because they feed on flies, bedbugs, roaches and other household insects.

ENTOMOLOGY

Giant Polyphemus Lives For Only One Purpose

See Front Cover

➤ THE POLYPHEMUS moth is one of our largest and most beautiful silk-spinning moths. The photograph by George A. Smith, on the front cover of this SCIENCE NEWS LETTER, shows the beauty and detail of this giant moth. It is found from the Atlantic to the Pacific. Its wings, which often reach a span of four inches, are delicately marked with shades of ochre, brown and blue. There is a distinct eye-like spot in each wing. The polyphemus never eats during its lifetime, which is only a few days. Its only mission seems to be that of finding a mate and depositing its eggs in order that its race will be continued.

Science News Letter, June 8, 1946

PSYCHIATRY

Nervous? Time Off from Job May Be Bad Advice

➤ TELLING a "nervous" patient to take time off from his job may be the worst advice a doctor can give. If the advice is followed the patient may become a chronic mental patient, Dr. Frederick W. Dershimer, director of psychiatry for E. I. du Pont deNemours & Company, warned at the meeting in Chicago of the American Psychiatric Association.

Employers and the public as well as employees may suffer if workers with nervous and mental disease are too rigidly eliminated from industry, he pointed out.

"Before we decide to screen them out," he said, referring to such cases, "we need to give serious consideration to the fact that the inventor of nylon was a known psychiatric case for years. Denying employment to him would have cost the du Pont Company more than the psychiatrist could hope to save in a lifetime."

Many patients suffering from severe psychoneuroses and some with psychoses, which are more serious forms of mental sickness, can be treated without leave of absence, Dr. Dershimer has found. By doing so, better and quicker results can be obtained than when sick leave is granted.

Psychiatrists going into industrial work need to learn everything possible about the organization and healthy functioning of the particular company where they work, Dr. Dershimer stated. Without this basic knowledge psychiatrists in the past have offered remedies for nonexistent ills and completely missed important problems they might have helped to solve.

"Tall tales" of job hazards told to new workers by the old hands sometimes lead the newcomers to work in a state of chronic terror. Other traits and habits of the American workman may cause or make worse some psychiatric problems. Unless the company psychiatrist is familiar with such conditions he cannot help the workers.

Science News Letter, June 8, 1946

INVENTION

Liquids Dehydrated Into Powder Form

➤ THREE PATENTS, Nos. 2,400,458 to 2,400,460, have been issued to Joseph M. Hall of Chicago on apparatus for dehydrating liquids such as fruits and vegetable juices into powder form. The liquid is fed into the drying chamber through a rotating hollow shaft which ends in a set of whirling spray nozzles, so that the liquid is thrown out in minute droplets. As these tend to fall towards the bottom of the big, top-shaped drying chamber they are met by a rising current of hot air, which removes the water. As planned by Mr. Hall, the dehydration is a two-stage process, the liquid being concentrated in the first drying chamber, and the concentrate reduced to final dryness in the second.

Rights in the patent are assigned to the Drying and Concentrating Company.

Science News Letter, June 8, 1946

GENERAL SCIENCE

Postwar Research Grants Of $175,000 Announced

➤ POSTWAR research grants to 28 universities and colleges providing $175,000 for investigations in many fields of physics and chemistry were announced by Dr. Joseph W. Barker, president of the Research Corporation.

Such special grants, named in honor of Dr. Frederick Gardner Cottrell, whose gift of patent rights in electrical precipitation in 1912 inaugurated the foundation, will total $2,500,000 in the next five years. They are intended to aid the return to their educational institutions of faculty members in war research.

Science News Letter, June 8, 1946

IN SCIEN

AERONAUTICS-ENGINEERING

Gas Turbine Engines for English Passenger Planes

➤ FOUR GIANT planes for the North Atlantic route, each to accommodate 180 seated passengers, have been authorized by the British government and three of them will be powered by gas turbines. The first, already in an advanced stage of construction, will be powered by conventional engines.

One of these eight-engined 110-ton planes, all to be known as Brabazon 1, will be ready for use within a year, its builder, the Bristol Aeroplane Company, expects. The first of those powered with gas-turbine units will be ready a year later. The Brabazon 1 will have a wing span of 230 feet. Fitted with sleeping berths, the new planes will accommodate 80 passengers.

Science News Letter, June 8, 1946

MEDICINE

If You Have a Cold, Don't Exercise

➤ EXERCISE IS bad for the common cold, contrary to some conceptions that a sweat will eliminate the ailment.

This is reported by Dr. Franklin Henry, assistant professor of physical education at the University of California, on the basis of experiments in which he tested 21 students both under conditions of good health and in the stages of an active cold.

Dr. Henry found that a person puts forth more effort when exercising with a cold than he does when in good health.

He said that while there is no significant difference in blood pressure or pulse rate, breathing performance for 15 seconds after exercise was significantly poorer in persons suffering from colds.

Dr. Henry also found, by analysis of the last bit of expired air after exercise, that there was a greater accumulation of carbon dioxide in the blood streams of persons with colds. He said this was probably due to a reduction in the individual's alkaline reserve, resulting in temporary hyperacidity in persons taking exercise with colds.

Science News Letter, June 8, 1946

SCIENCE FIELDS

PLANT PHYSIOLOGY

Signal Growth Potential Soaked Corn Grains

➤ CORN GRAINS, after soaking in water for a while, can give electrical signals telling how likely they are to sprout if planted, and what kind of yield can be expected from the stalks that will grow from them. How this is done is told by two Yale scientists, Dr. Oliver E. Nelson and Dr. H. S. Burr, in the *Proceedings of the National Academy of Sciences,* (April 15).

Soaked corn grains, they explain, have an electrical potential, and this can be registered by touching suitable electrodes to their opposite ends and leading the minute current thus released to a sufficiently sensitive galvanometer.

First readings made in this way were found to be correlated with the viability of the seed, that is, its power to sprout and grow if planted. If this connection is maintained for a time, the first potential drops somewhat and levels off. A second potential reading, made after this period of stabilization, has been found to be correlated with the weight of grain subsequently harvested from the cornstalk produced by that seed. Various hybrid corn strains show distinctive electrical potentials, the two investigators state.

Science News Letter, June 8, 1946

MEDICINE

Direct Record of Human Heart Action Obtainable

➤ BY INSERTING a fine wire into an elbow vein and gently pushing it forward until its tip rests inside the heart or against its walls and connecting the other end to a recording galvanometer, doctors can now get a direct record of the electrical currents of human heart action, Dr. H. H. Hecht, of the University of Utah Medical School, reported at the meeting of the American Federation for Clinical Research in Atlantic City.

None of the volunteers, some of whom had heart disease, were harmed by the procedure and none complained of unusual sensations, Dr. Hecht stated.

The location of the impulses which govern the heart beat could be shown for the first time with this procedure. They start in a section of the right side of the heart, and then spread over the human heart muscle in a well defined manner quite similar to the spread of impulses seen in open chest experiments performed on dogs and monkeys in both normal and abnormal conditions.

The electrical currents of heart action have been recorded for many years in human subjects and these electrocardiograms have been extensively used in diagnosis of heart and blood vessel disease, Dr. Hecht pointed out. However, no direct records from the human heart have been available. The significance of the electrocardiogram has been interpreted by analogy with information gained from experiments on strips cut from heart muscle, skeletal muscle or nerve tissue.

The direct records Dr. Hecht obtained show that the electrical phenomena associated with the heart beat in man are almost identical with those that can be obtained from the highly artificial nerve strip or muscle preparation. Doctors can therefore continue to use the electrocardiogram for patients, while the new technique is used to gain additional information about heart action.

Science News Letter, June 8, 1946

PSYCHIATRY

Juvenile Delinquents Are Neurotics

➤ JUVENILE delinquents are neurotic persons with unresolved conflicts and unconscious drives for which they are not responsible, Dr. Leonard M. Dub, of Washington, D. C., declared at the meeting of the American Psychiatric Association in Chicago.

Trying to reform them by, for example, teaching them that it is wrong to steal an auto for a joy-ride and that they should find something legitimate to do when they want to have fun does not help because it only touches the surface of their neurotic minds.

The real cause of the auto-stealing or other delinquent behavior lies much deeper and involves a problem of which the juvenile delinquent is not aware.

Sending such a young person to prison or reform school is almost pointless, Dr. Dub said, unless he is helped by a psychiatrist to understand and unravel the twisted threads of his own individual experience with life so that he can change not just his conscious motives for behavior but his whole attitude toward life.

Science News Letter, June 8, 1946

ACOUSTICS

New Instrument Imitates Any Musical Sound

➤ AN INSTRUMENT that can reproduce not only the sound of a piano but the tone of any individual piano or any other musical instrument is not going to be used in a symphony orchestra. It will stay in a scientific laboratory.

The instrument is a hundred-element tone synthesizer demonstrated to the Acoustical Society of America by E. C. Wente, C. A. Lovell and J. F. Muller of the Bell Telephone Laboratories, Murray Hill, N. J.

One hundred magnetic records placed side by side on a rotating drum produce sine-wave currents to generate a complex electric current. Special circuits adjust the build-up and decay rates of groups of components to simulate the sound of musical instruments.

Science News Letter, June 8, 1946

GEOLOGY

Paricutin Affords Chance To Study Soil Erosion

➤ PARICUTIN, Mexico's three-year-old volcano, not only affords scientists opportunity to study the early stages of a volcano's life history; it also offers an unparalleled chance to observe soil erosion in the raw. What water and wind are doing to the thick mantle of ash which Paricutin spread over 140 square miles of Mexican farms and forests was described and pictured by Dr. W. C. Lowdermilk of the U. S. Soil Conservation Service, before the meeting of the American Geophysical Union.

The volcanic ash is for the most part very fine and loose, and since there is no vegetation on it as yet it is washed away very easily, forming gullies that grow wider and deeper. Streams flowing down these gullies immediately after a storm consist of a gruel-like mud rather than water; in samples collected at various times, volcanic ash constituted from 40 to 60% of the total weight.

Large boulders that would sink in water will float on the fluid mud. Stones are often found in the middle of fields after a mud-flood has swept over them.

Yet this mantle of volcanic ash is not an unmixed curse. If modern plows and tractors can be got into the region, to bring the buried soil up and mix it with the ash, the fertility of the fields will be greatly enhanced.

Science News Letter, June 8, 1946

BOTANY-CHEMISTRY

Chemical War on Weeds

2,4-D, another wartime product, is being used as a household agent against weeds. It kills practically all plants except grasses, so don't get it on the flowers.

By DR. FRANK THONE

➤ CHEMICAL WARFARE against weeds has been launched on a huge scale this spring. From coast to coast, whole armies of householders are enthusiastically pumping their spray-guns, dealing death to dandelions that have long made occupied territory of their lawns. Along with the dandelions, plantain, purslane, chickweed, wild garlic and many other disfigurers of green turf are curling up and quitting, under the deadly mist of 2,4-D.

That symbol, 2,4-D, has suddenly become as much a household word as the equally sensational bane to bugs, DDT. Like DDT, it is a synthetic organic chemical—its full name is 2-4-dichlorophenoxyacetic acid. And like DDT, it is a war baby, and is only now getting out of uniform.

The great virtue of 2,4-D is what plant scientists call its selective action. It will kill almost any plant except members of the grass family and their near relatives, such as sedges and rushes. That is what makes it so useful on lawns, golfing fairways and putting greens, and everywhere that you want grass and nothing else. It can also be used on weedy pastures, where such bad citizens of the plant world as ragweed and jimson weed have taken over.

Selective action of 2,4-D is not absolute. A few weeds resist it, and a few desirable grasses are harmed by it. This is especially true of the bent grasses, favorites for lawn and park planting in some localities. However, blue-grass, which is what most lawns are made of, can stand repeated spraying without harm.

Kills Weeds but Not Corn

Another possible use for 2,4-D is killing cornfield weeds and eradicating such pests as wild mustard from fields of small grains; for all our grain crops are members of the grass family, so that the selective action of the weed-killer should work here, too. Preliminary experiments last year looked promising, and more extensive tests will be made this year by federal and state agronomists. Results with sugarcane (another giant grass) have already proved conclusive. Cane planters are enthusiastic.

For mass killing of rank weed growths like poison ivy, Japanese honeysuckle and bindweed or wild morning-glory, 2,4-D looks like a first class weapon. To be sure, it has to be used in stronger concentration to kill these tough vegetable thugs, and more than one spraying will be necessary, but it will get them in the end.

For uses of this kind, where everything in sight is to be killed, 2,4-D will have to meet the competition of another weed killer, ammonium sulfamate. This compound was hailed as the white hope against weeds when it made its first appearance about four years ago, but since it is also a good flameproofing material the whole available supply was needed for war purposes. It was not until after the collapse of the Axis that it became available for civilian purposes. It got a good enough try-out last year, however, to demonstrate its effectiveness.

Replace Old Weed Killers

Either 2,4-D or ammonium sulfamate, whichever proves cheapest to use, is likely to replace the older mass weed killers, like oil and sodium chlorate. These had to be used in considerable quantity to be effective, and both presented rather bad fire risks. Sodium chlorate, indeed, is used in some kinds of explosives and fire-works. Dead weed leaves with this stuff dried on them can flash into flame like lightning at the touch of an unextinguished match or cigaret.

Tests with 2,4-D last summer showed that it could neutralize ragweed's power to cause hayfever by preventing it from shedding its pollen. By the same token, it would also prevent ragweed from perpetuating its evil kind, for both the common species of ragweeds are annuals, depending on seed for the next year's

BEFORE AND AFTER—What one of the new herbicides will do to poison ivy, one of our wickedest weeds, is well shown in this pair of pictures. The picture on the left shows the homemaker spraying the poison ivy, and the other shows the weed as it looked a couple of weeks later. In this instance the chemical used was ammomium sulfamate; 2,4-D would do the job just as effectively.

growth. Some ragweed seed always lies dormant in the soil, ready to come up not one but three or four years after it is produced. However, successive sprayings of the same patch could exhaust these vital reserves in a few seasons.

Kills Seeds in Soil

Another possible tactic employing 2,4-D is its use in killing weed seeds in fallow fields, before the soil is made ready for a new planting. Tests showed that 2,4-D stirred into the upper layer of the soil would clean out all seeds, including grass seeds. It did the same thing when mixed with manure, which is often a source of weed seed when used for fertilizer.

Yet soil thus treated, as well as the soil under grass that has been sprayed, does not long hold its 2,4-D content. After a few months it has all disappeared, so that it is safe to plant any kind of seed you wish, even of highly sensitive vegetables and flowers.

What becomes of 2,4-D in the soil? Nobody knows yet; the whole thing is too new. Scientists conjecture that it may be made chemically inert by combination with substances in the soil, or (perhaps more likely) that fungi, which are everywhere and apparently ready to eat anything, may use it up for food. At any rate, it does obligingly get out of the way before next planting time.

Non-Poisonous to Animals

Another nice thing about 2,4-D: it is non-poisonous to human beings and domestic animals. It was tried out on cows and ewes, and had no detectable effect at all on them. Samples of blood drawn from their veins showed its presence, but it did not get into their milk. Also, some hardy scientists swallowed samples of it, and felt no ill effects afterwards.

Just now, 2,4-D is getting practically all the attention, but it is only one member of a very large chemical family. It has about a hundred fairly close relatives among organic compounds, all of which are known to have effects on plant growth. Probably many of them could be used as weed killers also, and some may be even more effective than 2,4-D.

It should be remembered that 2,4-D is not like other plant poisons in its action. It belongs to the group of chemicals that in small doses cause more rapid growth but otherwise leave the plants normal. In the heavier concentrations used as weed killers it promotes a wild and unhealthy overgrowth of the tissues, causing the leaves to pucker and twist and breaking down all internal communications. The plant acts almost as if it had suddenly become tumorous all over, and it dies of sheer inability to make its parts work together properly.

Don't Use on Flowers

If the householder using 2,4-D in his private feud with the weeds in his own yard will remember just one thing, he will not have any trouble. That is the initial fact that 2,4-D will kill practically all plants except grass. It can therefore be used to clean up the lawn, but must never be used on weeds in vegetable or flower gardens.

If you want to use the same sprayer for 2,4-D on your lawn and for insect pests in your garden, you must make sure it is thoroughly cleaned up before putting in the insecticide. All parts of the sprayer must be well washed in hot soapsuds, or better yet, in kerosene.

Don't spray your lawn when there's a breeze stirring. If you do, some of the fine spray may drift onto your flower beds or shrub borders, with unfortunate consequences. If it gets on your neighbor's flowers or shrubs, that's even worse.

Do your spraying only on warm days; temperatures around 80 or 85 degrees Fahrenheit are best. Effects of the poison are best when the weeds' sap is moving most actively, so that it will be carried to the inner issues and down to the root, getting in its deadly work all over.

In its pure form, 2,4-D is a white powder, practically insoluble in water. To make a water spray, it is necessary first to dissolve it in another chemical, and then mix this with water. It is in this dissolved form that 2,4-D is now offered on the market, under trade-names such as Weedone, Weedex, and the like. When this is mixed with water it still does not dissolve, but forms a milky emulsion which is a very good state for maximum distribution with a sprayer.

Tiny Drops Most Effective

Another thing to be remembered is, the finer the spray, the more effective the spraying. This is because tiny drops, like the water droplets in a thick fog or Scotch mist, have much more wetting effect than larger ones. So if you are buying a new spraygun, the best economy is to get the one that produces the finest spray. In that way, you'll get the most dead dandelions per dollar's worth of 2,4-D.

Science News Letter, June 8, 1946

PSYCHIATRY

Jap Prisoners Suffer Long-Lasting Handicap

➤ BRUTALITIES suffered in Japanese prison camps have had a long-lasting handicapping effect on the personalities of even those with the healthiest make-up before the experience, reported Maj. Stewart Wolf and Lt. Col. Herbert S. Ripley, Jr., of the Army's Ninth General Hospital at the meeting of the American Psychiatric Association.

None of those heard from a year after repatriation are "really well and happy and effectively engaged in a suitable job," although several are carrying on "adequately in productive capacities," the Army medical officers reported.

All of those who answered questionnaires sent out by the doctors stated they had become less trusting of their fellows than before. Most of them reported optimism out of keeping with their handicaps and difficulties of adjustment to peacetime life.

Science News Letter, June 8, 1946

PUBLIC HEALTH

"Living" War Memorials Would Aid Handicapped

➤ "LIVING" war memorials in the form of centers for rehabilitating handicapped individuals are suggested as a community project to honor war heroes.

The Baruch Committee on Physical Medicine declares that helping the handicapped to become employable is cheaper than supporting such persons and their families on local assistance rolls, and that much needed hospital space could be freed by a rehabilitation project.

Not only city rehabilitation centers, but also mobile consultant clinics comparable to those used for cancer and crippled children programs are urged by the report to help all disabled individuals.

Some of the activities suggested for the "living" war memorials include physical medicine, psycho-social adjustment, vocational guidance, special education for the handicapped, a sheltered workshop, brace and limb shop, research in rehabilitation and an industrial placement program.

Once established, the committee says that such centers could be relatively self-supporting with funds from private patients, the Veterans Administration, state rehabilitation programs, industry and insurance companies.

Science News Letter, June 8, 1946

Do You Know?

The disease known as *latent mosaic* in potato plants usually has little effect on the appearance of the plant but may cut the yield 20% or less.

Over 90% of British Honduras, Central America, is *forested;* some of the forests, however, cannot be made profitable. Mahogany, pine, rosewood and cedar are the principal timber woods.

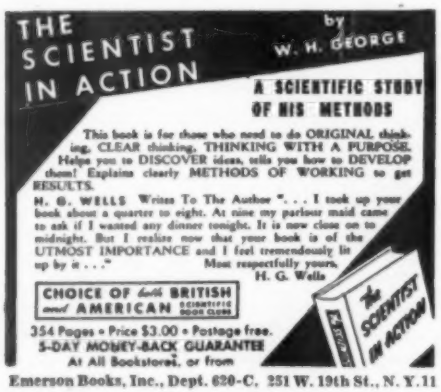
Grog to a sailor is rum weakened with water; its name is said to have originated with sailors because the first dilution was ordered by an English admiral called "Old Grog" who always wore grogram breeches.

Germans built 10 *helicopters* before their manufacturing plant was bombed out by the Allies, postwar investigations show; the rotor craft could climb 1000 feet a minute with 10 passengers and a load of fuel.

Organic chemicals, called wetting agents, are mixed with water to control dust from coal and other solids that have water-repellent properties which making wetting difficult; also the agents decrease the high surface tension of plain water.

Without the *forests* of Japan, its agricultural lands would soon wash away; the vast timberlands on the rugged slopes of hills and mountains hold the waters from rain and snow, preventing floods and erosion.

Between 40% and 50% of all *children* contract whooping cough before the fifth year.


THE SCIENTIST IN ACTION
by W. H. GEORGE
A SCIENTIFIC STUDY OF HIS METHODS
This book is for those who need to do ORIGINAL thinking, CLEAR thinking, THINKING WITH A PURPOSE. Helps you to DISCOVER ideas, tells you how to DEVELOP them! Explains clearly METHODS OF WORKING to get RESULTS.
H. G. WELLS Writes To The Author "... I took up your book about a quarter to eight. At nine my parlour maid came to ask if I wanted any dinner tonight. It is now close on to midnight. But I realize now that your book is of the UTMOST IMPORTANCE and I feel tremendously let up by it ..." Most respectfully yours, H. G. Wells
CHOICE OF both BRITISH and AMERICAN SCIENTIFIC BOOK CLUBS
354 Pages • Price $3.00 • Postage free.
5-DAY MONEY-BACK GUARANTEE
At All Bookstores, or from
Emerson Books, Inc., Dept. 620-C, 251 W. 19th St., N. Y. 11

MEDICINE

Stomach Ulcer Sufferers Are Dependent Type

➤ MEN WITH stomach ulcers, no matter how aggressive they may be, all suffer from a thwarted desire to be dependent on someone else, Drs. Frederic T. Kapp, Milton Rosenbaum and John Romano, of the University of Cincinnati College of Medicine, found from a study of 20 ulcer patients ranging in age from 17 to 54 years.

Some of the patients were outwardly independent, hard-driving and successful, following the usually accepted type of ulcer personality. But the behavior of these go-getters was only an excessive compensation for deeply repressed longing to depend on someone.

A second group of patients, fairly successful men, were outwardly meek, shy and effeminate. They were partly conscious of their dependent longings and openly depended on a mother or wife but at the same time made a partial effort at masculinity and independence.

The final and largest group in the 20 patients studied openly indulged their strong dependent desires. Chronic alcoholics and others with severe character disorders, bordering on the psychopathic, were included in this group.

Science News Letter, June 8, 1946

CHEMISTRY

New Process Polishes Silver While Coating

➤ SILVERWARE CAN now be both plated and polished while still in the electroplating bath where the silver coating is applied. It is a new process, discovered by a Westinghouse scientist. When taken from the bath the object plated has the luster that housewives demand; no buffing is needed to give the required polish.

It is an important discovery to all manufacturers of silver-plated objects because it saves material, time and cost. In the conventional silver-plating process, the object when silver-coated and removed from the bath has no luster and must be buffed by hand on a revolving wheel. Much silver is lost by abrasion and extra handling is required.

In the new process, the objects to be plated are immersed in the usual silver cyanide bath and the negative current, that causes the deposit of silver, is sent through. This negative current, however, is interrupted by intermittent positive charges, and these cause the luster. The positive current, of about four times the amperage used to plate the metal, is applied for a few seconds, discontinued, and sent through several times again. Any silver removed by the positive current remains in the bath.

Science News Letter, June 8, 1946

Drafts, sudden temperature drops, sex, age, and working posture all determine the number and severity of *colds* a person may have.

Honey is formed from the nectar of flowers after chemical changes take place when the bee mixes it with juices in its stomach.

Antu, one of the new efficient rat poisons, is chemically alpha naphthyl thiourea, and is particularly effective in killing Norway rats, the common kind found in American towns and farms.

The dangerous age for young *pedestrians* from motor vehicles is from four to six; youths of 17 are the principal juvenile victims of motor-vehicle fatalities affecting drivers and passengers.

ONE OPERATION—The teaspoon on the right has been silver plated but not polished. The other has undergone the new-born electro-polishing process perfected by a physicist in the Westinghouse Research Laboratories. The new method may supersede the burnishing of silver plate by mechanical buffing. The transformation takes a little more than a minute.

PSYCHIATRY

Feeblemindedness

Is sporadic and not necessarily associated with family traits. New ideas are replacing some old beliefs about heredity and mental disease.

➤ OLD IDEAS on the heredity of mental disease were reversed in a report by Dr. Abraham Myerson of Boston at the meeting of the American Psychiatric Association in Chicago.

Feeblemindedness, he reported finding from a study of 47 cases, tends to be sporadic and not greatly associated with family feeblemindedness, as previously held.

"It is time," Dr. Myerson declared, "that the whole concept of feeblemindedness as occurring in many members of the same group and persisting for generations was thrust into the limbo of the forgotten and misleading."

Schizophrenia, on the other hand, he believes from his study may occur in the families of at least half the patients with this serious mental disease. He found definite family mental disease in 23% of the patients under his care.

Again differing from orthodox psychiatric teaching, he reported finding environmental factors much more directly responsible for epilepsy than constitutional factors.

In the depressive states he found such an appallingly large proportion of mental disease in the families of patients that he considers it a trend of great importance to the human race.

He recommended establishment of a national institute for the study of heredity in mental disease. After 50 years of compiling pertinent facts he believes results will be obtained either justifying drastic national action to remedy the situation or showing that constitution and heredity play little or no part in causing mental disease.

The theory of schizophrenia being hereditary in nature was further upheld by Dr. Franz J. Kallmann of the New York State Psychiatric Institute and Hospital.

Predisposition to schizophrenia, he believes from a study of the disease in twins and others with close family relationships, depends on the presence of a specific genetic factor. This explains why the disease occurs in a particular member of a family at a particular time.

This theory, however, does not in Dr. Kallmann's opinion contradict current psychiatric belief that the disease can be prevented as well as cured.

Follow Hereditary Pattern

Brain waves in patients with certain kinds of mental disease also follow hereditary patterns, state Dr. Jacques S. Gottlieb, M. C. Ashby and John R. Knott, of the Iowa State Psychopathic Hospital and the State University of Iowa College of Medicine.

Brain wave patterns of 35 patients with either primary behavior disorders or psychopathic personality, these scientists found, showed a highly significant relationship to the combination of the brain wave records of their respective parents.

Abnormal brain wave patterns were found in 78% of children whose parents had abnormal brain waves, but in only 31% of children of parents with normal brain wave patterns.

Heredity has previously been shown to be a determining factor in the brain wave abnormality found in epilepsy, they pointed out.

Is Epilepsy Hereditary?

➤ THE CHANCE that a child of an average epileptic will have epilepsy is one in 40, Dr. William G. Lennox of Harvard Medical School declared.

Epilepsy is not directly inherited but predisposition to it may be transmitted, he said.

The hereditary influence in epilepsy is about equal to that in diabetes, one-half that in obesity (overweight), and one-eighth that in migraine, he calculated from a study of the family history of 2,000 patients and the personal history of 45 pairs of twins affected by seizures.

Strikingly good results in some patients with epilepsy have been obtained by treatment with a drug called tridione, Dr. Lennox and Dr. Harry L. Kozol stated.

This drug was announced to the medical world in the *Journal of the American Medical Association* last December (*See* SNL, Dec. 22, 1945).

The drug has not been used long enough, the doctors said, to warrant any statement about its long-term effects. Encouraging is the fact that in patients helped by it, brain waves also become normal.

Science News Letter, June 8, 1946

CHEMISTRY

Fire Retardant Property Of Paint Improved

➤ ALUMINUM POWDER added to priming coats improves the fire retardant properties of paint used in the interior of naval ships, Navy experience shows. The mixture used is obtained by adding 80% aluminum paste to the primer in the proportion of one pound of the paste to two of the primer.

Science News Letter, June 8, 1946

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

WYOMING

A Summer to Remember

The 900-acre Paton Ranch will give you trout-fishing in a mountain stream in the foothills of the Big Horn mountains, daily horseback rides along picturesque canyon trails and excellent food—most of which is grown on the ranch.

The region abounds in geological and historical interest—dinosaur bones, marine fossils and implements used by the Indians many years ago.

Write for illustrated, descriptive folder

PATON RANCH, SHELL, WYOMING

LANGUAGE IS POWER

...Forge ahead, win special assignments, promotion, better job in global peace time opportunities through ability to speak a foreign language.

MASTER A NEW LANGUAGE

quickly, easily, correctly by

LINGUAPHONE

The world-famous Linguaphone Conversational Method brings voices of native teachers INTO YOUR OWN HOME. You learn the new language by LISTENING. It's amazingly simple; thousands have succeeded.

HOME-STUDY COURSES IN 29 LANGUAGES

Send for FREE book—

LINGUAPHONE INSTITUTE

31 RCA Bldg., New York 20 • Circle 7-0830

LINGUAPHONE INSTITUTE,
31 RCA Bldg., New York 20, N. Y.
Send me the FREE Linguaphone Book.

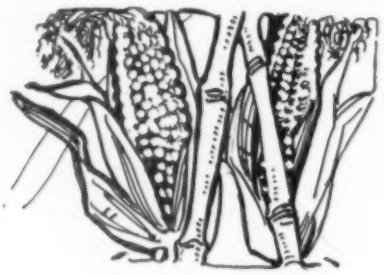
Name_____

Address_____ City_____

Language Interested_____

GENETICS

NATURE RAMBLINGS
by Frank Thone



Mendel's Bequest

➤ HENRY WALLACE declared a short time ago, during a visit to the Mendel museum at Mary Washington College, that Gregor Mendel did much toward the winning of the war, although he has been dead for several decades. As explanation, he pointed out the great increase in the corn crop made possible by the planting of hybrid corn, which in turn was made possible through the practical application of the basic principles of heredity which Mendel had discovered.

It is not quite fifty years since Mendel's original papers were rescued from the generation of obscurity in which they had been buried during his later lifetime. It is just forty years since Prof. George Shull of Princeton made the last planting of his experimental strains of hybrid corn. It is only a little over twenty years since Henry Wallace began his campaign to persuade farmers to stop merely selecting open-pollinated seed-corn ears for "prettiness" and begin growing hybrid corn for profit.

At that time he expressed his belief in the ability of hybrid corn to boost the per-acre yield by as much as ten per cent. This was a most cautious, conservative estimate; present-day figures show that the increase has been at least double that. This means more corn for less work; it also permits sloping fields to be changed from plowland to pasture, at once checking erosion and increasing supplies of milk and meat. So it is not at all far-fetched to assert that a long-dead Austrian monk helped America toward victory.

Corn is perhaps the most conspicuous of crop plants that has benefited by the application of the Mendelian principles, but is is by no means a solitary example. On the contrary, it is quite safe to say that there is no grain, or garden vegetable, or fruit, or fiber plant, or domestic animal that is not receiving attention from breeders who follow the lines originally laid down by Mendel nearly two generations ago. The method is even used to produce hybrid strains of forest trees, to give us quicker and bigger yields of timber and wood pulp.

Mendel was a European. His discovery has had its greatest development, in both theory and practice, in America. The chaos of the postwar world gives American science its opportunity to pay an old debt, by aiding European plant and animal breeders to establish "mendelized" varieties and breeds, to the general betterment of European standards of living.

Science News Letter, June 8, 1946

GOLD
TRANSFER INITIALS
To identify your property. They can be easily applied to Metal, Wood, Glass, China, Leather or painted surfaces.
18 LETTERS ½" high $1.00
W. B. MacKENNEY
726 Commercial Trust Bldg., Philadelphia 2, Pa.

GEOPHYSICS

Earthquakes Can Be Set Off by Rain

➤ RAIN CAN HELP set off earthquakes, Prof. V. Conrad of Harvard University's Blue Hill Observatory told the American Geophysical Union. It does not hasten the occurrence of all earthquakes, but only those resulting from the downbending of rock strata by the slow loading of erosional debris on top of them. The thousands of tons of water that filter down into the ground after heavy rains may prove the last straw in such a loading, increasing the strain in the supporting rocks to the breaking point.

Contrariwise, where an earthquake is in the making as the result of forces from beneath pushing up on the rock layers, the added burden of accumulated rain water will push in the opposite direction, perhaps delaying the occurrence of the earthquake.

Science News Letter, June 8, 1946

ASTRONOMY

Harvard Observatory Given Large Telescope

➤ THE TELESCOPE that for the last three decades has delighted university students and visitors in Rochester, N. Y., is being moved to Colorado to help probe the mysteries of the sun. The large Bausch & Lomb Optical Co. telescope has been made an outright gift to Harvard University.

The telescope is expected to be installed by fall in the High Altitude Observatory at Climax, Colo., the world's highest observatory. The Colorado observatory, astride the Rocky Mountain Divide, is operated jointly by Harvard and Colorado Universities.

The telescope, fitted with special filters, will be used primarily to study the sun's disk, including sun spots. An attached motion picture camera will record the rapid changes occurring in the solar atmosphere. The telescope boasts a 10½-inch lens and star dials that make it easy to read right ascension and declination and eliminate the necessity of computing hour angles.

Science News Letter, June 8, 1946

***GIFT TO HARVARD**—Dr. Donald H. Menzel, Harvard Observatory, and Dr. John W. Evans, right, formerly of the University of Rochester Institute of Optics, inspect the Bausch & Lomb Optical Company telescope, which is to be dismantled and installed at the High Altitude Observatory, the highest in the world, at Climax, Colorado.*

• Books of the Week •

THE ABSOLUTE WEAPON: Atomic Power and World Order—Frederick S. Dunn, Bernard Brodie, Arnold Wolfers, Percy E. Corbett, and William T. R. Fox—*Harcourt,* 214 p., $2. Essays based realistically upon the world as it is today, analyzing the nature of the atomic bomb and its effect on international relations, and pointing to the road the world must follow to find freedom from fear of the atomic bomb.

AMERICAN AVIATION DIRECTORY: Spring and Summer, 1946, Wayne W. Parrish, ed.—*American Aviation Publications,* 621 p., paper, $5. Aviation officials and companies of U. S., Canada, Latin America, Africa, Europe, and Australasia.

BUILDING AN ENGINEERING CAREER—Clement C. Williams—*McGraw,* 309 p., tables and illus., $2., 2nd ed. A book for use among college freshmen or secondary school students the purpose of which is to make clear the character of the engineering profession and its relation to society and to inculcate from the outset careful intellectual habits. This new edition takes into account recent developments in the science.

BULLETS BY THE BILLION—Wesley W. Stout—*Chrysler Corp.,* 75 p., illus., free. The story of the Chrysler Corporation's assembly plant in Evansville, Ind., where during the war ammunition was made in astronomical amounts.

CATALOG OF AMERICAN STANDARDS—*American Standards Assn.,* 23 p., paper, free. A list of 845 standards including definitions of technical terms, specifications for metals and other materials, dimensions, safety provisions for the use of machinery, methods of work and methods of test for the finished product.

THE COMMON SENSE BOOK OF BABY AND CHILD CARE—Benjamin Spock, M. D.—*Duell,* 527 p., illus., $3. A book which combines basic physical and medical information with psychological interpretation, which makes available the evidence of the specialist and translates theory into the actuality of handling your child.

ESSENTIALS OF PLANE AND SPHERICAL TRIGONOMETRY—Clifford Bell and Tracy Y. Thomas—*Holt,* 163 p., tables and diagrs., $2.30 with tables, $2.00 without tables, rev. ed. An enlarged edition of a textbook the purpose of which was to provide a brief but mathematically accurate text suitable for short courses during the wartime emergency. This edition contains sections on vectors, plane navigation, applications to surveying, complex numbers, etc.

FLAGS OF ALL NATIONS— Cleveland H. Smith and Gertrude R. Taylor—*Crowell,* 152 p., illus., $2.50. Full color illustrations and an explanation of the symbolism and of the historical development of our flag, the flags of U. S. territories and dependencies, and of all sovereign nations.

GENERAL BACTERIOLOGY LABORATORY MANUAL—L. S. McClung—*Saunders,* 106 p., diagrs., $1.25. A work book of laboratory exercises for classes in introductory bacteriology. The basic experiments serve not only to introduce the student to subject material, but to aid him in acquiring proficiency in essential techniques.

JOB PLACEMENT OF THE PHYSICALLY HANDICAPPED—Clark D. Bridges—*McGraw,* 329 p., tables and illus., $3.50. The essential factors involved in selecting and placing workers from the standpoint of physical ability. New techniques for determining demands of jobs, the abilities of workers, and the matching of workers to jobs are recommended.

PEOPLES SPEAKING TO PEOPLES: A Report on International Mass Communication from The Commission on Freedom of the Press—Llewellyn White and Robert D. Leigh—*Univ. of Chicago Press,* 122 p., $2. A discussion of our information agencies, of proposals for and against a merger of leading American telecommunications corporations, of censorship and of practical means to reduce it, and of the mission of radio, books, and motion pictures.

QUESTIONS AND ANSWERS ON GOVERNMENT INSPECTION OF PROCESSED FRUITS AND VEGETABLES—*Government Printing Office,* 20 p., illus., paper, 10 cents. The reasons for and nature of government inspection; what U. S. Standards are; how inspection is accomplished. U. S. Department of Agriculture, Miscellaneous Publication, No. 598.

RUSSIA ON THE WAY—Harrison Salisbury—*Macmillan,* 425 p., $3.50. A picture of life in contemporary Russia, written by a foreign correspondent who was Chief of the United Press Bureau in Russia for eight months.

TYPES AND PROBLEMS OF PHILOSOPHY: An Introduction—Hunter Mead—*Holt,* 402 p. $3. A presentation of the principal problems of philosophy in terms of the most significant movements and schools active today. A textbook for use in beginning philosophy courses.

YOU CAN STAY WELL—Adelle Davis—*Graphic Arts Research Foundation,* 89 p., tables, paper, $1. An abridged edition of the book by the same name which has been out of print. A story presenting usable facts about diet. Since a good diet requires more than the proverbial grain of salt, it might be well to warn the reader that nutrition is not the only factor necessary for good health.

Science News Letter, June 8, 1946

MEDICINE

Nerve Cutting Operation Relieves Stomach Ulcers

➤ A NEW NERVE cutting operation that brings relief to long-standing sufferers from stomach ulcers was reported by Dr. Lester R. Dragstedt of the University of Chicago to the American College of Physicians.

The operation consists in dividing the vagus nerve at a point on the left side of the chest just above the diaphragm or, in some cases, in the abdomen below the diaphragm.

The operation has been done on 73 patients with various types of stomach ulcers who had not been helped by other forms of treatment and were having frequent hemorrhages, pain or other symptoms.

Except for one man with a gastrojejunal ulcer and one woman with a duodenal ulcer, the operation has given "immediate, complete and permanent" relief of symptoms. The patients have gained weight and in most cases there is objective evidence of healing of the ulcers.

In the three and one-half years since the first patient was operated on, none of the patients has had a recurrence of ulcers, hemorrhage or perforation. The patients are allowed to move around the first day after the operation and they do not take any medicines nor do they have to follow any special diet.

The abnormally large, continuous secretion of stomach juice during the night and an increased activity of the fasting stomach in patients with duodenal ulcer returns to normal after the vagus nerve to the stomach has been cut. This bears out the opinion of many medical scientists that stomach ulcers originate in emotional conflict and nervous tension.

Science News Letter, June 8, 1946

YOUR
HAIR
AND ITS CARE
By O. L. Levin, M. D. and H. T. Behrman, M. D.
NEW, REVISED, EXPANDED EDITION—JUST OUT!
If you want healthy hair, lovely hair, then you need the expert advice in this book.
Two medical specialists have here pooled their knowledge to give you in plain language the up-to-date scientific facts now available about hair. They tell you what to do to save and beautify your hair, stimulate healthier hair growth, and deal with many problems, common and uncommon, as:
Dandruff—gray hair—thinning hair—care of the scalp—baldness—abnormal types of hair—excessive oiliness—brittle dryness—hair falling out—infection—parasites—hair hygiene, etc., etc.
Medical science is better equipped today than ever before to prevent trouble above the hair line; or, should some difficulty already have arisen, to deal effectively with it.
"A worthwhile book full of important information."
—Ohio State Medical Journal.
Price $2.00, incl. postage. 5-day-Money-Back Guarantee
EMERSON BOOKS, Inc., Dept. 613-C, 251 W. 19th Street, New York 11

·New Machines And Gadgets·

❁ *SOAP DISPENSER squirts the liquid material into a user's hands without being touched. When the hands are cupped to receive the soap, they are in a position where they break a beam of light directed against a photoelectric relay. This causes a flow of electric current to operate the dispenser.*

Science News Letter, June 8, 1946

❁ *ERASING MACHINE for use in drafting rooms is small, portable and power-driven. The eraser itself is a tube of rubber or other stretchable erasing material that fits over an extended shaft of the motor, the shaft having a flared end. This stretches out the ring of rubber that does the erasing.*

Science News Letter, June 8, 1946

❁ *ELECTRIC hygrometer, for high-precision humidity measurement and control, employs a sensing element that is claimed to be the speediest device known for measuring humidity changes. It neither adds nor takes away moisture from the space whose moisture content is being measured.*

Science News Letter, June 8, 1946

❁ *OIL-BURNING furnace with a new vacuum draft needs no chimney of the ordinary type as a draft-creating device. It uses a suction fan which pulls air through the combustion chamber and discharges combustion gases through a vent exhaust.*

Science News Letter, June 8, 1946

❁ *PLASTIC GLOBE, weighing only 70 pounds although 52 inches in diameter, aids air pilots and stewardesses to study world routes, as shown in the picture. It is made of five layers of fabric, each impregnated with a solution of cellulose acetate and a protective coat of the same plastic covers the map.*

Science News Letter, June 8, 1946

❁ *RUBBER RINGS, with central slots running around their outer faces, fit snugly into the curved ends of wire coat hangers and keep garments from slipping. The walls of the ring enclose a chamber within which an insecticide may be placed.*

Science News Letter, June 8, 1946

❁ *RADIO-TELEFAX, a new type of telegraph communication, sends by radio a picture, or facsimile reproduction, of a message written on a telegraph blank and wrapped around the cyclinder of the transmitter. Pilot boats outside New York Harbor are using the system to report incoming ships.*

Science News Letter, June 8, 1946

❁ *FILM RECORDER of sound, an improved instrument, can be used as a public address system, and a speech can be broadcast at the same time. One hundred sound tracks can be indented across the width of the film; a dial shows the number of the track on which a recording or play-back is located.*

Science News Letter, June 8, 1946

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 314.

BOOKS

SCIENCE NEWS LETTER will gladly obtain any American book or magazine in print for subscribers.

Send check or money order to cover regular retail price. If price is unknown, send $5 and change will be returned. We will pay postage in the United States.

When publications are free, send 10c for handling.

Book Department
SCIENCE NEWS LETTER
1719 N Street, N.W.
Washington 6, D.C.

Question Box

ACOUSTICS

What new instrument imitates any musical sound? p. 361.

ASTRONOMY

What company is giving a giant telescope to the Harvard Observatory? p. 366.

BOTANY-CHEMISTRY

Why should 2,4-D not be used on flowers in the yard? p. 363.

GENETICS

Who was the man who first discovered the principles of heredity? p. 366.

GEOPHYSICS

What is the location of the hidden archipelago recently discovered? p. 358.

MEDICINE

What is the method of obtaining a direct record of the human heart action? p. 361.

What is the new theory about smoking for diabetics? p. 359.

PSYCHIATRY

How do doctors feel about the old theory that mental diseases are all hereditary? p. 365.

What is now considered the best place to treat children suffering from schizophrenia? p. 356.

What is the drug which is being used to improve the behavior of problem children? p. 355.

RADIO

What is the radio navigation system which may be used to guide pilotless aircraft? p. 357.

SOCIOLOGY

What area constituted the known world to the Greeks? p. 356.

Where published sources are used they are cited.

The imprint to the right is mailing address for your Science News Letter.

Date on lower line is expiration of your subscription.

Renew early to avoid lapse in service.

In requesting change of address please give your old address as well as the new one, at least two weeks before change is to become effective.